

AMENDMENTS TO THE CLAIMS:

Please amend Claims 38 and 39 and add Claims 48 through 53 to read as follows:

1. (Previously Presented) A zoom lens, comprising in sequence from an object side to an image side:

a first lens unit having a positive optical power;

a second lens unit having a negative optical power;

a third lens unit having a positive optical power; and

a fourth lens unit having a negative optical power,

wherein said first, second, third, and fourth lens units move to the object side along an optical axis in zooming from the wide angle end to the telephoto end,

wherein said fourth lens unit has a diffractive optical surface located on an object side surface of an optical element of said fourth lens unit,

wherein the lens units comprising the zoom lens are only said first, second, third, and fourth lens units, and

wherein the shape of the surface closest to the image side in said fourth lens unit is convex to the image side.

2. (Original) A zoom lens according to claim 1, wherein said diffractive optical surface comprises concentric circular phase gratings that are rotationally symmetrical with respect to the optical axis of said zoom lens.

3. (Previously Presented) A zoom lens according to claim 1, wherein said fourth lens unit has a diffractive optical surface located on the object side of a lens closest to the image side of said fourth lens unit.

4. (Previously Presented) A zoom lens according to claim 1, wherein said first, second, third, and fourth lens units are individually denoted as the i-th lens unit, where i equals 1, 2, 3, or 4, wherein when the optical power obtained by the diffractive action of the diffractive optical surface of said i-th lens unit is denoted by ϕ_{Di} , and the optical power of the i-th lens unit is denoted by ϕ_{Li} , the condition $\phi_{Di} / \phi_{Li} > 0$ is satisfied.

5. (Original) A zoom lens according to claim 1, wherein said first lens unit comprises one positive lens element and one negative lens element.

6. (Original) A zoom lens according to claim 1, wherein said second lens unit comprises one negative lens element.

7. (Original) A zoom lens according to claim 1, wherein said third lens unit comprises at least two positive lens elements and at least one negative lens element.

8. (Original) A zoom lens according to claim 7, wherein said third lens unit comprises a bonded lens.

9. (Original) A zoom lens according to claim 1, wherein said fourth lens unit comprises one positive lens element and two negative lens elements.

10. (Original) A zoom lens according to claim 1, wherein said diffractive optical surface has a structure formed by laminating phase diffraction gratings composed of materials having different refractive indices.

11. (Original) A zoom lens according to claim 1, wherein said diffractive optical surface corrects lateral chromatic aberration.

12. (Previously Presented) Optical equipment, comprising:
an optical-equipment element; and
a zoom lens according to claim 1, said zoom lens being connected to said optical-equipment element.

13 through 34 (Cancelled)

35. (Previously Presented) A zoom lens, comprising in sequence from an object side to an image side:

a first lens unit having a positive optical power;
a second lens unit having a negative optical power;
a third lens unit having a positive optical power; and

a fourth lens unit having a negative optical power,
wherein said first, second, third, and fourth lens units move to the object side along an optical axis in zooming from the wide angle end to the telephoto end,
said fourth lens unit has a diffractive optical surface located on an object side surface of an optical element of said fourth lens unit,
wherein the lens units comprising the zoom lens are only said first, second, third, and fourth lens units, and
wherein the only lenses of said first lens unit are a negative lens whose concave surface faces the object side and a positive lens in sequence from the object side to the image side.

36. (Previously Presented) A zoom lens, comprising in sequence from an object side to an image side:

a first lens unit having a positive optical power;
a second lens unit having a negative optical power;
a third lens unit having a positive optical power; and
a fourth lens unit having a negative optical power,
wherein said first, second, third, and fourth lens units move to the object side along an optical axis in zooming from the wide angle end to the telephoto end,
wherein said first lens unit has a diffractive optical surface located on a surface other than a lens surface closest to the object side of said first lens unit,

wherein the lens units comprising the zoom lens are only said first, second, third, and fourth lens units, and

wherein said second lens unit has only one lens element, which is a biconcave negative lens element.

37. (Previously Presented) A zoom lens, comprising in sequence from an object side to an image side:

a first lens unit having a positive optical power;

a second lens unit having a negative optical power;

a third lens unit having a positive optical power; and

a fourth lens unit having a negative optical power,

wherein said first, second, third, and fourth lens units move to the object side along an optical axis in zooming from the wide angle end to the telephoto end,

wherein said fourth lens unit has a diffractive optical surface located on an object side surface of an optical element of said fourth lens unit,

wherein the lens units comprising the zoom lens are only said first, second, third, and fourth lens units, and

wherein the zoom lens further comprises an aperture stop, and said aperture stop moves with said second lens unit as a unit in zooming.

38. (Currently Amended) A zoom lens, comprising in sequence from an object side to an image side:

a first lens unit having a positive optical power;
a second lens unit having a negative optical power;
a third lens unit having a positive optical power; and
a fourth lens unit having a negative optical power,
wherein said first, second, third, and fourth lens units move to the object side
along an optical axis in zooming from the wide angle end to the telephoto end,
wherein said fourth lens unit has a diffractive optical surface located on an object
side surface of an optical element of said fourth lens unit,
wherein the lens units comprising the zoom lens are only said first, second, third,
and fourth lens units, and
wherein said second lens unit has only one lens element, which is a negative lens
element.

39. (Currently Amended) A zoom lens, comprising in sequence from an object
side to an image side:

a first lens unit having a positive optical power;
a second lens unit having a negative optical power;
a third lens unit having a positive optical power; and
a fourth lens unit having a negative optical power,
wherein said first, second, third, and fourth lens units move to the object side
along an optical axis so that the interval between said first lens unit and said fourth lens unit
decreases, in zooming from the wide angle end to the telephoto end,

wherein said fourth lens unit has a diffractive optical surface located on an object side surface of an optical element of said fourth lens unit, ~~and~~

wherein the lens units comprising the zoom lens are only said first, second, third, and fourth lens units, and

wherein said fourth lens unit comprises three lenses.

40. (Previously Presented) A zoom lens, comprising in sequence from an object side to an image side:

a first lens unit having a positive optical power;

a second lens unit having a negative optical power;

a third lens unit having a positive optical power; and

a fourth lens unit having a negative optical power,

wherein said first, second, third, and fourth lens units move to the object side along an optical axis in zooming from the wide angle end to the telephoto end,

wherein said fourth lens unit has a diffractive optical surface located on an object side surface of an optical element of said fourth lens unit,

wherein the lens units comprising the zoom lens are only said first, second, third, and fourth lens units, and

wherein said fourth lens unit comprises a positive lens and two negative lenses.

41. (Previously Presented) A zoom lens according to claim 36, wherein the shape of the surface closest to the image side in said fourth lens unit is convex to the image side.

42. (Previously Presented) A zoom lens according to claim 36, wherein the only lenses of said first lens unit are a negative lens whose concave surface faces the object side and a positive lens in sequence from the object side to the image side.

43. (Previously Presented) A zoom lens according to claim 36, wherein the zoom lens further comprises an aperture stop, and said aperture stop moves with said second lens unit as a unit in zooming.

44. (Previously Presented) A zoom lens according to claim 36, wherein said first, second, third, and fourth lens units move to the object side along an optical axis so that the interval between said first lens unit and said fourth lens unit decreases, in zooming from the wide angle end to the telephoto end.

45. (Previously Presented) A zoom lens according to claim 36, wherein said fourth lens unit comprises a positive lens and two negative lenses.

46. (Previously Presented) A zoom lens according to claim 1, wherein said fourth lens unit has a diffractive optical surface.

47. (Previously Presented) A zoom lens according to claim 1, wherein said diffractive optical surface is provided with the effect of an aspherical surface by changing the pitch of said diffractive optical surface.

48. (New) A zoom lens according to claim 35, wherein said diffractive optical surface has a structure formed by laminating phase diffraction gratings composed of materials having different refractive indices.

49. (New) A zoom lens according to claim 36, wherein said diffractive optical surface has a structure formed by laminating phase diffraction gratings composed of materials having different refractive indices.

50. (New) A zoom lens according to claim 37, wherein said diffractive optical surface has a structure formed by laminating phase diffraction gratings composed of materials having different refractive indices.

51. (New) A zoom lens according to claim 38, wherein said diffractive optical surface has a structure formed by laminating phase diffraction gratings composed of materials having different refractive indices.

52. (New) A zoom lens according to claim 39, wherein said diffractive optical surface has a structure formed by laminating phase diffraction gratings composed of materials having different refractive indices.

53. (New) A zoom lens according to claim 40, wherein said diffractive optical surface has a structure formed by laminating phase diffraction gratings composed of materials having different refractive indices.